

NASA Guidelines
on
Report Literature

**CASE FILE
COPY**

NASA Guidelines on Report Literature

Prepared by

Scientific and Technical Information Branch
NASA Headquarters

NASA GUIDELINES ON REPORT LITERATURE

NASA seeks for inclusion in its Scientific and Technical Information System research reports, conference proceedings, meeting papers, monographs, and doctoral and postgraduate theses which relate to the NASA mission and objectives. Included in the following pages are topics of interest to NASA.

NASA Scientific and Technical Information Collection

Every year the NASA Scientific and Technical Information Branch (STIB) systematically collects nearly 100,000 documents related to research and development in aeronautics and the space sciences. The documents are collected from government organizations, universities, research laboratories, corporations, and commercial publishers in the United States and in more than 200 foreign countries. They are acquired by STIB as part of an extensive program to provide NASA scientists and engineers with comprehensive reference material on subjects related to their work.

Scope

Subject Matter In subject scope, the NASA scientific and technical information collection encompasses the basic and applied sciences related to aeronautics and space research. Documents in the collection are indexed by keywords chosen from a controlled vocabulary, the *NASA Thesaurus*, that contains more than 18,000 subject entries.

Document Types The collection includes NASA technical reports, NASA Special Publications, NASA-owned patents and patent applications, journal and periodical articles, books, pamphlets, monographs, conference proceedings, scientific meeting papers, translations, non-NASA reports, dissertations, and theses.

Scientific and Technical Aerospace Reports (STAR)

STAR is a guide to thousands of current technical reports issued by organizations around the world. Twice a month *STAR* provides abstracts and indexes of current, unclassified reports acquired by the NASA Scientific and Technical Information Facility (STIF) and processed for inclusion in the NASA scientific and technical data base.

STAR complements but, with rare exceptions, does not duplicate *IAA*, which announces aerospace-related journal articles and other forms of published literature.

Scope

Age and Volume *STAR* publication began in 1962. Nearly 325,000 citations have been published in *STAR* to date, new citations are being published at the rate of about 24,000 a year.

Document Sources *STAR* announces technical reports issued by NASA and its contractors, by other U.S. government agencies and their contractors, and by both domestic and foreign corporations, universities, and research organizations.

Document Types and Currency All documents announced in *STAR* are unclassified. *STAR* citations cover research reports that, with rare exceptions, have been issued in the past two years.

Older reports and those of minimal substance are normally excluded from *STAR* announcement. A few reports and translations are excepted from the age restriction because of their outstanding quality and potential value. Documents not announced because of age or limited significance are entered into special bibliographic series for more limited processing; their citations are accessible on RECON.

International Aerospace Abstracts (IAA)

IAA is a semimonthly document announcement journal that provides abstracts and indexes of published documents in fields related to aerospace research and technology. STIB sponsors publication of *IAA* by the American Institute of Aeronautics and Astronautics (AIAA).

IAA lists all journal articles, conference papers, books, and other forms of published literature that have been selected and processed by AIAA for incorporation into the data base at STIF. *IAA* complements but, with rare exceptions, does not duplicate *STAR*, which announces aerospace report literature.

Scope

Age and Volume *IAA* has been published since 1961. At the close of 1977, it had presented approximately 500,000 citations of items in the published aerospace literature. Currently, about 35,000 citations are announced each year.

Document Sources The literature announced by *IAA* appears in publications issued by private and public organizations throughout the world.

Document Types *IAA* announces the following types of literature: articles appearing in periodical publications, conference proceedings and meeting papers issued by professional societies and academic organizations, translations of journals and journal articles, monographs, and collected works containing documents written by different authors and relating to a common subject.

In addition, some foreign dissertations and theses are announced in *IAA*.

Document Currency Only current material is accessioned in *IAA*. Most literature is announced within two months of its receipt by AIAA. If a publication is received more than one year past the date when it first became available, it is usually not processed for announcement.

INDEX TO TOPICS OF INTEREST TO NASA

TOPIC	NUMBER	TOPIC	NUMBER
A			
Ablation	34-09	Bioengineering	54-03
Ablative Materials	34-09	Bioinstrumentation	54-05
Acoustics	71-01	Biological Radiation Effects	52-04
Adhesives	27-02	Biology (General)	51-01
Aerial Photography	35-01	Bioluminescence	23-03
Aerodynamic Characteristics	02-01	Bionics	63-01
Aerodynamics, Airfoil	02-03	Biotelemetry	32-04 54-05
Aerodynamics, Wings	02-03	Bodies, Aerodynamics of	02-01
Aerodynamics of Bodies	02-02	Boundary Layer Flow	34-01
Aerospace Management	81-01	Boundary Layer Mechanics	34-01
Aerospace Medicine	52-01	Brazing	37-06
Air Conditioning	34-08	C	
Air Flow	35-08	Calibration	35-03
Air Piracy	03-06	Cameras	35-01
Air Traffic Control	03-01	Cartography	43-02
Airborne Computers	60-02	Cathode Ray Tubes	35-06
Aircraft, STOL/VTOL	03-03	Celestial Mechanics	13-01
Aircraft Noise	03-05	Centrifuges	14-02
Aircraft Safety	03-06	Ceramics	27-03
Airfoil Aerodynamics	02-03	Cermets	24-01
Airports	03-01	Chemical Analysis	23-01
Aluminum	26-01	Chemical Batteries	44-02
Amplifiers (Electronic)	33-07	Chemical Engineering	23-02
Amplifiers Fluid	34-03	Chemical Reactions	23-02
Analog Computers	60-01	Chemiluminescence	23-03
Analytical Chemistry	23-01	Circuit Theory	33-05
Antennas	33-03	Circuitry	33-05
Anthropometry	54-03	Clean Rooms	14-04
Apollo Applications Program	16-01	Clear Air Turbulence	03-07
Apollo Project	16-01	Clinical Medicine	52-02
Apollo-Soyuz Test Program	16-01	Clothing Protective	54-02
Apollo Telescope Mount	16-01	Cloud Research	47-04
Applied Mathematics	59-01	Coatings	25-03
Astronomical Satellites	15-04	Coherent Light	36-01
Astronomy Planetary	91-02	Combustion Physics	34-05
Astronomy Solar	89-01	Comets	89-03
Astronomy Stellar and Galactic	89-02	Commercial Aviation	03-01
Astrophysical Plasmas	90-02	Communication, Laser	36-02
Astrophysics	89-02	Communication Blackout	17-01
Atmosphere, Upper Earth	46-01	Communication Equipment	32-02
Atmospheres Planetary	91-02	Communication Satellites	32-01
Atmospheric Entry	34-07	Communication Systems	32-03
Atomic Physics	72-01	Communication Theory	32-06
Attitude Control	18-01	Communications, Space	17-01
Automatic Flight Control	17-02	Composite Materials	24-01
Auxiliary Electrical Systems	05-02	Computer Hardware	60-01
Auxiliary Power, Nuclear	44-04	Computer Software	61-01
Auxiliary Propulsion	20-02	Computers Airborne or Spaceborne	60-02
Aviation, Civil	03-01	Computers Analog	60-01
Aviation Law	84-01	Computers Digital	60-01
B		Computers Hybrid	60-01
Batteries, Chemical	44-02	Control Theory Feedback and	33-08
Bearings	37-01	Cooling	34-08
Behavior, Individual and Group	53-01	Corrosion	25-01
Beryllium	26-02	Cosmic Radiation	93-01
Biochemistry	51-02	Cosmology	89-02
		Creep Tests	39-08
		Crew Safety	54-02

TOPIC	NUMBER	TOPIC	NUMBER
Crew Training and Evaluation	53-01	Friction	37-04
Cryogenic Propellants	28-01	Fuel Cells	44-02
Cryogenics	34-10	Fuels Rocket	28-01, 28-02
Crystals Metal	25-02		
Cybernetics	63-01		
Cytology	51-01		
		G	
D		Galactic Evolution	89-02
Damping Structural Vibration and	39-03	Gas Dynamics	34-02 35-08
Data Handling Systems, Biological	54-05	Gas Flow	35-08
Data Processing	59-02	Gaskets	37-05
Data Recording	35-07	Gears	37-01
Decelerators	15-05	Gemini Project	16-01
Detonators	34-05	Generators, Electric	33-06
Dielectrics	76-03	Geodesy	43-02
Digital Computer	60-01	Geology	46-02
Display Systems	35-06	Geomagnetism	46-03
Docking	18-02	Geophysical Satellites	15-04
Documentation	82-01	Graphite	27-05
		Gravitation	90-01
		Gravitational Collapse	90-01
E		Gravity Gradient Control	15-02
Earth Resources	43-01	Ground Effect Machines	03-02
Ecology	51-01	Ground Support Systems	14-01
Elastomers	27-04	Guidance	17-03
Electric Propulsion	20-03	Gyroscopes	17-02
Electrical Equipment	33-06		
Electrical Insulation	33-06	H	
Electrical Systems	05-02	Heat Pipes	34-06
Electrochemistry	25-04	Heat Transfer Basic	34-06
Electromagnetic Propulsion	20-03	Heat Transfer Reentry	34-07
Electromagnetic Radiation	33-09	Helicopters	03-02
Electronic Amplifiers	33-07	Holography	36-02
Electronic Components	33-04	Honeycomb Structures	39-06
Electronic Packaging	33-04	Human Engineering	54-03
Electrostatic Propulsion	20-03	Hybrid Computers	60-01
Energy Resources	44-01	Hydraulic Shock	39-04
Engine Test Stands	14-02	Hydraulic Systems	05-01
Environment Simulation	14-03	Hygiene and Sanitation	54-01
Epitaxial Deposition	76-04		
Exobiology	55-01	I	
Extraterrestrial Life	55-01	Impact Phenomena	39-04
Extravehicular Operations	16-01	Individual and Group Behavior	53-01
		Induction Heating	34-06
F		Industrial Safety	81-01
Fatigue, Structural	39-05	Inertial Guidance	17-03
Feedback and Control Theory	33-08	Inertial Navigation	17-02
Fiber Technology	24-02	Information Retrieval	82-01
Filament Winding	24-02	Information Technology	82-01
Fission Products	73-02	Information Theory	32-06
Flares Solar	93-02	Infrared Technology	35-02
Flight Control	17-03	Infrared Testing	37-10
Fluid Amplifiers	34-03	Instrument Calibration	35-03
Fluid Flow	34-04	Instrument Standards	35-03
Fluidics	34-03	Instrumentation Spacecraft	19-01
Fluorescence	23-03	Instruments, Meteorological	47-05
Flyby Missions	15-03	Instruments, Navigation	17-02
Food and Water Technology	54-01	Instruments, Optical	74-01
		Insulation Thermal	34-08

TOPIC	NUMBER	TOPIC	NUMBER
International Cooperation	84-01	Measurement, Pressure	35-05
International Law	84-01	Measurement, Temperature	35-04
Ion Engines	20-03	Mechanical Shock	39-04
Ion Propulsion	20-03	Medicine, Aerospace	52-01
Ionosphere	46-01	Medicine, Clinical	52-02
Isotopic Space Power	44-04	Metal Crystals	25-02
J		Metal Forming	37-07
Jet Flow	35-08	Metallurgy	26-07
Jet Propulsion	07-01	Metals, Liquid	26-03
L		Metals, Refractory	26-06
Laminated Materials	39-06	Meteorological Instruments	47-05
Laminates	24-01	Meteorological Satellites	47-01
Landing Modules	16-01 91-02	Meteors and Meteorites	89-03
Laser Application	36-02	Microelectronic Devices	33-10
Laser Communications	36-02	Microelectronics	33-10
Laser Photography	36-02	Micrometeoroids	89-03
Laser Ranging	36-02	Micrometeorology	47-03
Lasers	36-01	Microminiaturization	33-10
Launch Complex	14-01	Microthrust	20-02
Launch Facilities	14-01	Microwaves	33-11
Launch Vehicle Recovery	15-01	Molecular Physics	72-02
Launch Vehicles	15-01	Moon	91-01
Law	84-01	Motors Electric	33-06
Leakage	37-05	N	
Life Support Systems	54-01	Natural Resources	43-01
Lifting Bodies	15-05	Navigation Instruments	17-02
Light	74-02	Navigation Systems	17-02
Light Coherent	36-01	Noise Pollution	45-01
Liquefied Gases	34-10	Noise, Radio	32-05
Liquid Flow	34-04	Noise and Sonic Boom	03-05
Liquid Metals	26-03	Nondestructive Testing	37-10
Liquid Propellants	28-01	Nuclear Auxiliary Power	44-04
Loads	39-02	Nuclear Physics	73-01
Lubricants	37-02	Nuclear Space Power	44-04
Lubrication	37-02	Numerical Analysis	64-01
Luminescence	23-03	O	
Lunar Exploration	91-01	Oceanography	48-01
Lunar Landings	91-01	Optical Instruments	74-01
Lunar Photography	35-01, 91-01	Optical Observation (Tracking)	17-04
Lunar Surface	91-01	Optical Photography	35-01
M		Optics	74-01
Machine Tools	37-03	Orbital Assembly	16-01
Machining	37-03	Orbital Calculation	13-01
Magnetism	33-12	Orbital Workshop	16-01
Magnetohydrodynamics	75-03	Orbiting Observatories	15-04
Man-Machine Systems	54-04	P	
Management	81-01	Parachutes and Decelerators	15-05
Maneuverable Reentry Vehicle	15-05	Photochemical Reactions	23-04
Manned Spacecraft	16-01	Photography	35-01
Mapping	43-02	Photography, Laser	36-02
Marketing	81-01	Photosynthesis	23-04
Masers	36-01	Physics Atomic	72-01
Mathematics Applied	59-01	Physics Combustion	34-05
Measurement, Gas Flow	35-08	Physics, Molecular	72-02

TOPIC	NUMBER	TOPIC	NUMBER
Physics Nuclear	73-01	Reliability, Spacecraft	39-08
Physics, Plasma	75-02	Rendezvous	18-02
Physiological Factors	52-03	Rocket Engines	20-01
Physiological Monitors	54-05	Rocket Fuels, Liquid	28-01
Planetary Astronomy	91-02	Rocket Fuels, Solid	28-02
Planetary Atmospheres	91-02	Rocket Nozzles	20-01
Planetary Bases	91-02	Rocket Sounding	15-02
Planetary Exploration	91-02	Rocket Test Facilities	14-02
Planetary Landings	91-02		
Plasma Applications	75-01	S	
Plasma Diagnostics	75-02		
Plasma Dynamics	75-02	Safety Crew	54-02
Plasma Jet Technology	75-01	Safety and Safety Devices Aircraft	03-06
Plasma Physics	75-02	Sandwich Construction	39-06
Plasma Power Source	75-01	Sandwich Materials	24-01
Plasmas Astrophysical	90-02	Sanitation, Hygiene and	54-01
Plastics	27-01	Satellites, Communication	32-01
Pneumatic Systems	05-01	Satellites Geophysical	15-04
Pollution Control	45-01	Satellites, Meteorological	47-01
Polymers	27-06	Satellites, Scientific	15-04
Powder Metallurgy	26-07	Seals	37-05
Pressure Measurement	35-05	Seismology	46-02
Probability	65-01	Selective Dissemination of Information	82-01
Probes Space	15-03	Selenography	91-01
Propellants, Liquid	28-01	Semiconductors	33-02
Propellants, Solid	28-02	Sensors	19-02
Propulsion, Auxiliary	20-02	Shell Theory	39-01
Propulsion, Electric	20-03	Shell Vibration	39-01
Propulsion, Jet	07-01	Silicones	27-01
Protective Clothing and Equipment	54-02	Simulation, Space Environment	14-03
Psychological Factors	53-01	Simulators	14-03
Pumps	37-08	Sintering	26-07
Pyrolytic Materials	34-09	Skylab Program	16-01
		Sloshing	28-01
Q		SNAP Program	44-04
		Solar Activity	93-02
Quality Control	38-01	Solar Astronomy	89-01
Quasars	89-02	Solar Flares	93-02
		Solar Radiation Hazards	93-02
R		Solar Simulators	14-03
		Solar Space Power	44-03
Radar Equipment	33-01	Soldering	37-06
Radar Photography	35-01	Solid Propellants	28-02
Radiation, Cosmic	93-01	Solid State Devices	76-01
Radiation Electromagnetic	33-09	Sondes	15-02
Radiation, Solar	93-02	Sonic Boom	03-05
Radiation Belts	93-03	Sound	71-01
Radiation Effects Biological	52-04	Sounding Rockets	15-02
Radiation Hazards, Solar	93-02	Space Cabin Atmospheres	54-01
Radio Noise	32-05	Space Communications	17-01
Radioactivity	73-02	Space Environment Simulation	14-03
Ramjet Engines	07-01	Space Law	84-01
Reactor Test Facilities	14-02	Space Photography	35-01
Recoverable Launch Vehicles	15-01	Space Power Isotopic	44-04
Reentry Heat Transfer	34-07	Space Power, Nuclear	44-04
Reentry Vehicles	15-05	Space Power, Solar	44-03
Refractory Metals	26-06	Space Probes	15-03
Reinforced Materials	24-02	Space Programs (General)	84-01
Reliability, Quality Control and	38-01	Space Shuttle	16-01
Reliability, Structural	39-02 39-08	Space Stations	16-01

TOPIC	NUMBER
Spacesuits	54-02
Spaceborne Computers	60-02
Spacecraft, Manned	16-01
Spacecraft, U S S R	15-06
Spacecraft Attitude Control	18-01
Spacecraft Instrumentation	19-01
Spacecraft Reliability	39-08
Spacelab Program	16-01
Stainless Steel	26-04
Star Distribution	89-02
Star Tracking	17-02
Statistics	65-01
Steel	26-04
Stellar Astronomy	89-02
Sterilization	14-04
STOL/VTOL Aircraft	03-03
Stress Analysis	39-07
Stress Corrosion	25-01
Stresses and Loads	39-02
Structural Fatigue	39-05
Structural Reliability	39-02
Structural Tests	39-08
Structural Vibration and Damping	39-03
Submillimeter Waves	33-11
Superalloys	26-06
Supercritical Wing	02-03
Superconductivity	76-02
Supersonic Transport	03-04
Systems Analysis	61-01

T

Telemetry	32-04
Telescopes	89-01
Television Systems	32-03
Temperature Measurement	35-04
Test Facilities	14-02
Test Ranges	14-02
Test Stands	14-02
Testing Nondestructive	37-10
Tests Structural	39-08
Thermal Insulation	34-08
Thermal Protection	34-08
Thermoplastics	27-01
Thrust Chambers	20-01
Titanium	26-05
Toxicity and Toxicology	52-01
Tracking	17-04
Tracking Stations	17-04
Training and Evaluation Crew	53-01
Trajectory Calculations	13-01
Trajectory Control	17-03
Transducers	19-02
Transistors	33-02
Transonic Flight	02-03, 03-04
Transport, Supersonic	03-04
Turbofan Engine	07-01
Turbojet Engine	07-01
Turbomachinery	37-11

TOPIC	NUMBER
Turbulence, Clear Air	03-07
Turbulence Gas	34-02
	U
U S S R Spacecraft	15-06
Ultrasonic Testing	37-10
Ultrasonics	71-02
Upper Atmosphere	46-01
	V
Vacuum Chambers	14-03
Vacuum Technology	37-09
Van Allen Belt	93-03
Vehicle Servicing	14-01
Vibration Shell	39-01
Vibration and Damping Structural	39-03
	W
Water Resources	48-01
Wear	37-04
Weather Forecasting	47-02
Weightlessness (Biological)	52-01
Welding	37-06
Whiskers	24-02
Wind Tunnels	09-01
Wing Aerodynamics	02-03

X

X Ray Inspection	37-10
X Ray Stress Analysis	39-07

Page intentionally left blank

Page intentionally left blank

SUBJECT GROUPS

AERONAUTICS

- 01 AERONAUTICS (GENERAL)
- 02 AERODYNAMICS
- 03 AIR TRANSPORTATION AND SAFETY
- 04 AIRCRAFT COMMUNICATIONS AND NAVIGATION
- 05 AIRCRAFT DESIGN, TESTING AND PERFORMANCE
- 06 AIRCRAFT INSTRUMENTATION
- 07 AIRCRAFT PROPULSION AND POWER
- 08 AIRCRAFT STABILITY AND CONTROL
- 09 RESEARCH AND SUPPORT FACILITIES (AIR)

ASTRONAUTICS

- 12 ASTRONAUTICS (GENERAL)
- 13 ASTRODYNAMICS
- 14 GROUND SUPPORT SYSTEMS AND FACILITIES (SPACE)
- 15 LAUNCH VEHICLES AND SPACE VEHICLES
- 16 SPACE TRANSPORTATION
- 17 SPACECRAFT COMMUNICATIONS, COMMAND AND TRACKING
- 18 SPACECRAFT DESIGN, TESTING AND PERFORMANCE
- 19 SPACECRAFT INSTRUMENTATION
- 20 SPACECRAFT PROPULSION AND POWER

CHEMISTRY AND MATERIALS

- 23 CHEMISTRY AND MATERIALS (GENERAL)
- 24 COMPOSITE MATERIALS
- 25 INORGANIC AND PHYSICAL CHEMISTRY
- 26 METALLIC MATERIALS
- 27 NONMETALLIC MATERIALS
- 28 PROPELLANTS AND FUELS

ENGINEERING

- 31 ENGINEERING (GENERAL)
- 32 COMMUNICATIONS
- 33 ELECTRONICS AND ELECTRICAL ENGINEERING
- 34 FLUID MECHANICS AND HEAT TRANSFER
- 35 INSTRUMENTATION AND PHOTOGRAPHY
- 36 LASERS AND MASERS
- 37 MECHANICAL ENGINEERING
- 38 QUALITY ASSURANCE AND RELIABILITY
- 39 STRUCTURAL MECHANICS

GEOSCIENCES

- 42 GEOSCIENCES (GENERAL)
- 43 EARTH RESOURCES
- 44 ENERGY PRODUCTION AND CONVERSION
- 45 ENVIRONMENT POLLUTION
- 46 GEOPHYSICS
- 47 METEOROLOGY AND CLIMATOLOGY
- 48 OCEANOGRAPHY

LIFE SCIENCES

- 51 LIFE SCIENCES (GENERAL)
- 52 AEROSPACE MEDICINE
- 53 BEHAVIORAL SCIENCES
- 54 MAN/SYSTEM TECHNOLOGY AND LIFE SUPPORT
- 55 PLANETARY BIOLOGY

MATHEMATICAL AND COMPUTER SCIENCES

- 59 MATHEMATICAL AND COMPUTER SCIENCES (GENERAL)
- 60 COMPUTER OPERATIONS AND HARDWARE
- 61 COMPUTER PROGRAMMING AND SOFTWARE
- 62 COMPUTER SYSTEMS
- 63 CYBERNETICS
- 64 NUMERICAL ANALYSIS
- 65 STATISTICS AND PROBABILITY
- 66 SYSTEMS ANALYSIS
- 67 THEORETICAL MATHEMATICS

PHYSICS

- 70 PHYSICS (GENERAL)
- 71 ACOUSTICS
- 72 ATOMIC AND MOLECULAR PHYSICS
- 73 NUCLEAR AND HIGH ENERGY PHYSICS
- 74 OPTICS
- 75 PLASMA PHYSICS
- 76 SOLID-STATE PHYSICS
- 77 THERMODYNAMICS AND STATISTICAL PHYSICS

SOCIAL SCIENCES

- 80 SOCIAL SCIENCES (GENERAL)
- 81 ADMINISTRATION AND MANAGEMENT
- 82 DOCUMENTATION AND INFORMATION SCIENCE
- 83 ECONOMICS AND COST ANALYSIS
- 84 LAW AND POLITICAL SCIENCE
- 85 URBAN TECHNOLOGY AND TRANSPORTATION

SPACE SCIENCES

- 88 SPACE SCIENCES (GENERAL)
- 89 ASTRONOMY
- 90 ASTROPHYSICS
- 91 LUNAR AND PLANETARY EXPLORATION
- 92 SOLAR PHYSICS
- 93 SPACE RADIATION

Page intentionally left blank

Page intentionally left blank

SCOPE NOTES

AERONAUTICS

01 AERONAUTICS (GENERAL)

RELATED TOPIC

World Space Programs and Aerospace Law 84-01
NASA programs in general, foreign aerospace programs, international cooperation, law related to space and aeronautics, Congressional aerospace hearings

02 AERODYNAMICS

AERODYNAMIC CHARACTERISTICS 02-01

Lift, drag, and factors affecting pitch, roll and yaw

AERODYNAMICS OF BODIES 02-02

Aerodynamics of bodies of revolution, cylinders, cones and lifting bodies

AIRFOIL AND WING AERODYNAMICS 02-03

Aerodynamics of wings and airfoil shapes and forms, supercritical wing

RELATED TOPICS

Wind Tunnels 09-01

Wind tunnel and shock tube installations, test programs, and technology

Boundary Layer Technology 34-01

Boundary layer flow and mechanics, including boundary layer control, combustion control, separation, transition, and turbulence

03 AIR TRANSPORTATION AND SAFETY

COMMERCIAL AND GENERAL AVIATION 03-01

Design, operation and maintenance of specific aircraft used in, or being developed for, civil aviation, airports and facilities, air traffic control and navigation

HELICOPTERS AND GROUND EFFECT MACHINES 03-02

Helicopters, rotary wing aircraft, ground effect machines, hovercraft, flying platforms, etc

STOL/VTOL AIRCRAFT 03-03

Aircraft capable of short or vertical takeoffs and landings

SUPERSONIC TRANSPORT 03-04

Research in supersonic, transonic, and hypersonic transport types, concepts, specifications, and performances

AIRCRAFT NOISE AND SONIC BOOM 03-05

Aerodynamics, mechanical and combustion noise generated by aircraft and methods of noise reduction

AIRCRAFT SAFETY AND SAFETY DEVICES 03-06

Aircraft safety studies, accident investigation, air piracy, safety techniques and safety devices

CLEAR AIR TURBULENCE 03-07

Causes, effects, and methods of detection

04 AIRCRAFT COMMUNICATIONS AND NAVIGATION

RELATED TOPIC

Navigation Systems 17-02

Spacecraft and aircraft navigation systems including star trackers, inertial systems, Doppler and stellar navigation, and navigation instruments

See also topics under Subject Group 32, Communications

05 AIRCRAFT DESIGN, TESTING AND PERFORMANCE

HYDRAULIC AND PNEUMATIC SYSTEMS

05-01

Hydraulic and pneumatic components, systems, and instrumentation

AUXILIARY ELECTRICAL SYSTEMS

05-02

Electric auxiliary power supply systems, distribution systems, components, and applications

06 AIRCRAFT INSTRUMENTATION

RELATED TOPIC

Spacecraft and Aircraft Instrumentation

19-01

Spacecraft and aircraft instruments, gauges, indicators, and instrument systems

07 AIRCRAFT PROPULSION AND POWER

JET PROPULSION

07-01

Turbojet, pulsejet, and ramjet propulsion systems including specific engines

08 AIRCRAFT STABILITY AND CONTROL

RELATED TOPICS

Aerodynamic Characteristics

02-01

Lift, drag, and factors affecting pitch, roll and yaw

Boundary Layer Technology

34-01

Boundary layer flow and mechanics, including boundary layer control, combustion control, separation, transition, and turbulence

09 RESEARCH AND SUPPORT FACILITIES (AIR)

WIND TUNNELS

09-01

Wind tunnel and shock tube installations, test programs, and technology See also Subject Group 02, Aerodynamics

RELATED TOPIC

Commercial and General Aviation

03-01

Design, operation and maintenance of specific aircraft used in, or being developed for, civil aviation, airports and facilities, air traffic control and navigation

ASTRONAUTICS

12 ASTRONAUTICS (GENERAL)

RELATED TOPIC

World Space Programs and Aerospace Law

84-01

NASA programs in general, foreign aerospace programs, international cooperation, law related to space and aeronautics, Congressional aerospace hearings

13 ASTRODYNAMICS

CELESTIAL MECHANICS AND ORBITAL CALCULATIONS

13-01

Mathematical calculations for celestial mechanics, spacecraft orbits and spacecraft and ballistic trajectories

14 GROUND SUPPORT SYSTEMS AND FACILITIES (SPACE)

SPACECRAFT GROUND SUPPORT

14-01

Launch facilities, control networks, vehicle maintenance and servicing For spacecraft tracking stations and networks, see topics 17-04 and 32-03

TEST FACILITIES

14-02

Test ranges, centrifuges, engine test stands, rocket test installations, and reactor test facilities

SIMULATORS AND SIMULATION	14-03
Solar, space, and environment simulators, vacuum chambers, and simulation programs, methods, and technology	
STERILIZATION	14-04
Spacecraft sterilization, sterilization methods, clean rooms, and contamination control	
<i>RELATED TOPICS</i>	
Wind Tunnels	09-01
Wind tunnel and shock tube installations, test programs, and technology See also Subject Group 02, Aerodynamics	
Tracking	17-04
Tracking installations, personnel, equipment, and systems using radio, radar, infrared, or optical techniques	
Communication Equipment	32-02
Communication equipment, including radio, microwave, infrared, light and television equipment	
15 LAUNCH VEHICLES AND SPACE VEHICLES	
LAUNCH VEHICLES	15-01
Atlas, Saturn, Titan, other large and medium launch vehicles	
SOUNDING ROCKETS	15-02
Upper atmosphere aerology and meteorology probes and other small launch vehicles	
SPACE PROBES	15-03
Lunar and planetary probes, including Pioneer, Ranger, Mariner, Voyager, and deep space probes	
SCIENTIFIC SATELLITES	15-04
Geophysical and astronomical satellites, orbiting observatories, Discoverer and Explorer satellites	
REENTRY VEHICLES	15-05
All vehicles and maneuverable vehicles capable of entering a planetary atmosphere, also decelerators, drogues and other devices used with reentry vehicles, lifting bodies See also 16-01, Space Transportation and Manned Spacecraft	
U S S R SPACECRAFT	15-06
All U S S R spacecraft and programs, manned and unmanned	
<i>RELATED TOPICS</i>	
Spacecraft Ground Support	14-01
Launch facilities, control networks, vehicle maintenance and servicing For spacecraft tracking stations and networks, see 17-04 and 32-03	
Spacecraft and Aircraft Instrumentation	19-01
Spacecraft and aircraft instruments, gauges, indicators, and instrument systems	
Communication Satellites	32-01
INTELSAT, WESTAR, MARISAT, and other domestic and foreign communication satellites	
Meteorological Satellites	47-01
Nimbus, Tiros, and meteorological data from satellites	
16 SPACE TRANSPORTATION	
SPACE TRANSPORTATION AND MANNED SPACECRAFT	16-01
All manned space vehicles, including the Shuttle, Apollo, Skylab, Spacelab, Apollo-Soyuz Test Program, and other orbiting laboratories and manned flights For U S S R spacecraft, see 15-06	
17 SPACECRAFT COMMUNICATIONS, COMMAND AND TRACKING	
SPACE COMMUNICATIONS	17-01
Reentry, lunar, interplanetary, satellite, and spacecraft communications Does not include references to Communication Satellites, for which see 32-01	

NAVIGATION SYSTEMS	17-02
Spacecraft and aircraft navigation systems including star trackers, inertial systems, Doppler and stellar navigation, and navigation instruments	
GUIDANCE SYSTEMS	17-03
Spacecraft guidance and control, midcourse guidance and reentry guidance, and spacecraft guidance systems	
TRACKING	17-04
Tracking installations, personnel, equipment, and systems using radio, radar, infrared, or optical techniques	
RELATED TOPICS	
Radar Equipment	33-01
Radar types, applications and component parts	
Antennas	33-03
Radar and radio antennas and applications	
See also topics under Subject Group 32, Communications	
18 SPACECRAFT DESIGN, TESTING AND PERFORMANCE	
SPACECRAFT ATTITUDE CONTROL AND STABILIZATION	18-01
Attitude control system, stability techniques, and instrumentation	
RENDEZVOUS AND DOCKING	18-02
Rendezvous guidance, rendezvous trajectories and docking techniques	
19 SPACECRAFT INSTRUMENTATION	
SPACECRAFT AND AIRCRAFT INSTRUMENTATION	19-01
Spacecraft and aircraft instruments, gauges, indicators, and instrument systems	
SENSORS AND TRANSDUCERS	19-02
Sensing elements used in space vehicles or aerospace services, pressure, temperature, acoustic transducers, etc	
RELATED TOPICS	
Navigation Systems	17-02
Spacecraft and aircraft navigation systems including star trackers, inertial systems, Doppler and stellar navigation, and navigation instruments	
Telemetry	32-04
Data transmission and measuring, biotelemetry, telephotometry, and telepsychometry	
Bioinstrumentation	54-05
Biotelemetry, medical electronics, physiological monitoring, biological measurement, and biological data handling	
See also other topics under Subject Group 32, Communications	
20 SPACECRAFT PROPULSION AND POWER	
ROCKET ENGINES, NOZZLES AND THRUST CHAMBERS	20-01
Specific engines used in rocket propulsion, nozzle and thrust chamber design, materials, and performance	
AUXILIARY PROPULSION	20-02
Spacecraft propulsion systems other than the main propulsion system (i.e., steering jets, retrorockets, and propulsion units for extravehicular operations)	
ELECTRIC PROPULSION	20-03
Propulsion systems by charged electrical particles accelerated by electrical or magnetic fields, includes electromagnetic and electrostatic propulsion	
RELATED TOPIC	
Jet Propulsion	07-01
Turbojet, pulsejet, and ramjet propulsion systems including specific engines	
See also topics under Subject Group 44, Energy Production and Conversion	

CHEMISTRY AND MATERIALS

23 CHEMISTRY AND MATERIALS (GENERAL)

CHEMICAL ANALYSIS	23-01
Qualitative, quantitative, X-ray, chromatography, and other analytical techniques	
CHEMICAL PROCESSES AND ENGINEERING	23-02
Chemical processes and specific chemical reactions such as oxidation, nitration, hydrogenation, etc	
LUMINESCENCE	23-03
Chemiluminescence, fluorescence, phosphorescence, bioluminescence, and related topics	
PHOTOCHEMISTRY	23-04
Photolysis, photosynthesis, and actinometry	
RELATED TOPIC	
Biochemistry	51-02
Chemistry of living organisms and physiochemistry	

24 COMPOSITE MATERIALS

COMPOSITE MATERIALS	24-01
Types of composite materials, including laminates, sandwich materials and cermets, properties and uses	
REINFORCED MATERIALS AND FIBERS	24-02
Materials reinforced by inclusions, fiber reinforcement, whiskers, filament wound vessels	

25 INORGANIC AND PHYSICAL CHEMISTRY

CORROSION	25-01
Metal corrosion, stress corrosion, corrosion prevention, and tests for corrosion	
METAL CRYSTALS	25-02
Structure, defects, and technology of metal crystals	
COATINGS	25-03
Types of coatings, properties and uses, coating techniques	
ELECTROCHEMISTRY	25-04
Electrochemical processes, electrolysis, and electrolytic processes	

26 METALLIC MATERIALS

ALUMINUM	26-01
Aluminum, aluminum alloys, compounds and powdered aluminum, properties and uses	
BERYLLIUM	26-02
Beryllium, beryllium alloys and compounds, properties and uses	
LIQUID METALS	26-03
Characteristics, properties, technology, and uses of liquid metals	
STEEL	26-04
Types of steel and stainless steel alloys, properties and uses	
TITANIUM	26-05
Titanium and titanium alloys, properties and uses	
REFRACTORY METALS	26-06
Refractory metals and alloys, and superalloys, properties and uses	
METALLURGY	26-07
Powder metallurgy, sintering, fractography and metallography	

27 NONMETALLIC MATERIALS

PLASTICS	27-01
Specific plastics, thermoplastics, resins, thermosetting plastics, high temperature plastics, silicones and styrenes, properties and uses	

ADHESIVES	27-02
Types of adhesives, properties and uses	
CERAMICS	27-03
Specific ceramics, properties, and uses	
ELASTOMERS	27-04
Specific elastomers, properties and uses	
GRAPHITE	27-05
Graphite, pyrolytic graphite, pyrographic alloy, properties and uses	
POLYMERS	27-06
Types of polymers, properties and uses, polymer chemistry and polymer physics	
28 PROPELLANTS AND FUELS	
LIQUID PROPELLANTS	28-01
Cryogenic, hydrogenic, and thixotropic propellants, uses, properties, manufacture, storage and handling, oxidizers and igniters used with liquid propellants	
SOLID PROPELLANTS	28-02
Types, uses, properties, manufacture, storage and handling, propellant grain studies, and oxidizers and igniters used with solid propellants	
<u>ENGINEERING</u>	
31 ENGINEERING (GENERAL)	
RELATED TOPICS	
See specific topics under Subject Groups 32-39	
32 COMMUNICATIONS	
COMMUNICATION SATELLITES	32-01
INTELSAT, WESTAR, MARISAT, and other domestic and foreign communications satellites	
COMMUNICATION EQUIPMENT	32-02
Communication equipment, including radio, microwave, infrared, light and television equipment	
COMMUNICATION SYSTEMS	32-03
Types of communication systems, e g, television, digital, etc, and specific systems, e g, Defense Communication Systems, Deep Space Network, etc	
TELEMETRY	32-04
Data transmission and measuring biotelemetry, telephotometry, and telepsychometry	
RADIO NOISE	32-05
Studies of radio noise sources, random noise, signal-to-noise ratio, noise reduction, and noise measurement	
COMMUNICATION THEORY	32-06
Information theory, coding automata theory, signal processing, and decision theory	
RELATED TOPICS	
Radar Equipment	33-01
Radar types, applications and component parts	
Antennas	33-03
Radar and radio antennas and applications	
See also topics under Subject Group 17, Spacecraft Communications, Command and Tracking	
33 ELECTRONICS AND ELECTRICAL ENGINEERING	
RADAR EQUIPMENT	33-01
Radar types, applications, and component parts	

SEMICONDUCTORS AND TRANSISTORS	33-02
Semiconductors and transistors, types, devices, materials, and applications See also Solid State Devices, 76-01	
ANTENNAS	33-03
Radar and radio antennas and applications	
ELECTRONIC COMPONENTS	33-04
Types, design, applications, packaging, and reliability	
CIRCUITRY	33-05
Circuit theory, production techniques, reliability, protection, and applications For microcircuits see 33-10, Microelectronics	
ELECTRICAL EQUIPMENT	33-06
Generators, motors, connectors, and insulation, design and application	
AMPLIFIERS	33-07
Types of electronic amplifiers, design, and application For fluid amplifiers see also 34-03, Fluidics	
FEEDBACK AND CONTROL THEORY	33-08
Systems, techniques, and designs	
ELECTROMAGNETIC RADIATION	33-09
Wave propagation, electromagnetic effects, properties, detection, and application	
MICROELECTRONICS	33-10
Microcircuits, microelectronic devices and components, microminiaturized electronic equipment	
MICROWAVE AND SUBMILLIMETER WAVE TECHNOLOGY	33-11
Microwave research, measurement techniques, generation, modulation, and absorption	
MAGNETISM	33-12
Theory and research, aeromagnetism, ferromagnetism, hydromagnetism, paramagnetism, and thermomagnetism	
RELATED TOPICS	
Auxiliary Electrical Systems	05-02
Electric auxiliary power supply systems, distribution systems, components, and applications	
Communication Equipment	32-02
Communication equipment, including radio, microwave, infrared, light, and television equipment	
 34 FLUID MECHANICS AND HEAT TRANSFER	
BOUNDARY LAYER TECHNOLOGY	34-01
Boundary layer flow and mechanics, including boundary layer control, combustion control, separation, transition, and turbulence	
GAS DYNAMICS	34-02
Applied and theoretical gas dynamics, problem solving, hypersonic and rarefied gas dynamics	
FLUIDICS	34-03
Fluid amplification, fluid logic circuits, and fluid devices	
FLUID FLOW	34-04
Liquid flow, hydromechanics, and cavitation flow, does not include gas or air flow	
COMBUSTION PHYSICS	34-05
Combustion phenomena, kinetics, instability, detonation, theory	
HEAT TRANSFER, BASIC	34-06
Characteristics and studies of various forms of heat transfer, heat dissipation, and heat resistance	
REENTRY HEAT TRANSFER	34-07
Heat transfer problems on reentry and their solution	

THERMAL PROTECTION	34-08
Methods and materials used in thermal insulation and protection and for various types of cooling	
ABLATION	34-09
Ablation studies, ablating materials, and application to reentry vehicles and rocket nozzles	
CRYOGENICS	34-10
Low temperature research For cryogenic propellants see 28-01	
RELATED TOPICS	
Aerodynamic Characteristics	02-01
Lift, drag, and factors affecting pitch, roll and yaw	
Gas Flow Measurement	35-08
Devices, applications and systems for measuring gas flow	
35 INSTRUMENTATION AND PHOTOGRAPHY	
PHOTOGRAPHY	35-01
Cameras and photographic equipment and methods including optical, aerial, and radar photography	
INFRARED TECHNOLOGY	35-02
Infrared devices, including scanners, detectors, filters, cameras, and masers	
INSTRUMENT STANDARDS AND CALIBRATION TECHNIQUES	35-03
Measurement and radiation standards and calibration of instruments	
TEMPERATURE MEASUREMENT	35-04
Heat and temperature measuring devices, applications, and systems	
PRESSURE MEASUREMENT	35-05
Pressure measuring devices, applications, and systems	
DISPLAY SYSTEMS	35-06
Cathode ray tubes and display techniques and principles	
DATA RECORDING	35-07
Data recorders and recording systems and techniques	
GAS FLOW MEASUREMENT	35-08
Devices, applications and systems for measuring gas flow	
RELATED TOPICS	
Navigation Systems	17-02
Spacecraft and aircraft navigation systems including star trackers, inertial systems, Doppler and stellar navigation, and navigation instruments	
Telemetry	32-04
Data transmission and measuring, biotelemetry, telephotometry, and telepsychometry	
Meteorological Instruments	47-05
Types and uses of meteorological instruments	
Bioinstrumentation	54-05
Biotelemetry, medical electronics, physiological monitoring, biological measurement, and biological data handling	
See also topics under Subject Group 19, Spacecraft Instrumentation	
36 LASERS AND MASERS	
LASERS AND MASERS	36-01
References to lasers and masers in general, laser theory, and types of lasers and masers	
LASER APPLICATIONS	36-02
Laser communications, laser photography, and laser ranging	
37 MECHANICAL ENGINEERING	
BEARINGS AND GEARS	37-01
Types of bearings and gears, uses, materials, and applications	

LUBRICATION AND LUBRICANTS	37-02
Lubrication materials, systems, and applications	
MACHINING	37-03
Machining processes and techniques and machine tools	
FRICTION AND WEAR	37-04
Types of friction, friction measurement and effects, frictionless environment, and wear effects	
SEALS	37-05
Sealants, gaskets, packing, leakage, self-sealing materials, and sealing techniques	
WELDING	37-06
Brazing, bonding, soldering, and welding techniques and processes, weldability of various materials, and properties and characteristics of welds	
METAL FORMING	37-07
Theory, techniques, and processes of metal forming other than machining	
PUMPS	37-08
Pumps, pump seals, and pumping in aerospace technology	
VACUUM TECHNOLOGY	37-09
Vacuum systems, techniques and processes, vacuum testing measurement and material fabrication	
NONDESTRUCTIVE TESTING	37-10
Techniques and processes for the nondestructive testing of materials, including infrared, ultrasonic, and X-ray testing	
TURBOMACHINERY	37-11
Axial flow machines, centrifugal compressors and pumps, gas turbines, turbocompressors, turbine pumps, turbofans, turbogenerators	
 38 QUALITY ASSURANCE AND RELIABILITY	
QUALITY CONTROL AND RELIABILITY	38-01
Product development, qualitative testing and analysis of materials and structures, and reliability criteria for components and structures	
 39 STRUCTURAL MECHANICS	
SHELLS	39-01
Shell structures, stresses, loads, buckling and vibration	
STRESSES AND LOADS	39-02
Stresses and loads on launch vehicles, spacecraft, and aerospace structures	
STRUCTURE VIBRATION AND DAMPING	39-03
Vibration and damping in aerospace structures, spacecraft and airframes, panel flutter	
IMPACT PHENOMENA	39-04
Studies of impact phenomena in aerospace structures and components, also micrometeoroid impact damage	
STRUCTURAL FATIGUE	39-05
Fatigue studies and analysis, techniques for aerospace structures and components	
SANDWICH CONSTRUCTION	39-06
Honeycomb, multilayer and laminated fabrication, techniques and structures	
STRESS ANALYSIS	39-07
Stress calculation and analysis of structures	
STRUCTURAL TESTS AND RELIABILITY	39-08
Destructive and nondestructive testing and reliability of aerospace structures	

GEOSCIENCES

42 GEOSCIENCES (GENERAL)

RELATED TOPICS

See specific topics under Subject Groups 43-48

43 EARTH RESOURCES

EARTH RESOURCES

43-01

Earth resources studies, the role of satellites in natural resource development, geology, agriculture, forestry

GEODESY AND CARTOGRAPHY

43-02

Geodetic positions, satellite surveying, geodetic applications, mapping techniques, analyzing methods, and mapping systems

RELATED TOPICS

Water Resources and Oceanography

48-01

Water conservation and development, hydrology, remote sensing of floods, snow cover, ice, oceanography, other hydrosphere studies

Urban Technology and Transportation

85-01

Application of aerospace technology to the problems of cities, urban development, planning, research, and transportation, rail transportation, rapid transit systems, police services, water and sewage treatment, waste utilization, and land use

44 ENERGY PRODUCTION AND CONVERSION

ENERGY RESOURCES

44-01

Production, conversion, transmission, conservation of energy, solar energy conversion, wind power, remote survey of energy resources, hydrogen economy

FUEL CELLS AND CHEMICAL BATTERIES

44-02

Electrochemical, biochemical and regenerative fuel cells, silver-cadmium, nickel-oxide and other batteries

SOLAR SPACE POWER

44-03

Photovoltaic cells, solar cells, solar energy, absorbing films, solar energy converters and solar power systems

NUCLEAR AUXILIARY POWER

44-04

Nuclear auxiliary reactors, isotopic space power, and specific SNAP Systems

45 ENVIRONMENT POLLUTION

ENVIRONMENTAL POLLUTION CONTROL

45-01

Applications of aerospace techniques, including remote sensing, to all aspects of air, water, thermal, and environmental pollution, specific pollutants, noise, noise injuries, noise meters, atmospheric composition, water quality

46 GEOPHYSICS

UPPER EARTH ATMOSPHERE

46-01

Earth atmosphere above the troposphere, ionospheric composition, phenomena, chemical reactions and satellite measurement

GEOLOGY AND SEISMOLOGY

46-02

Earth geology, petrography, and orography, earthquake detection, measuring and recording instruments, and theoretical models

GEOMAGNETISM

46-03

Geomagnetic anomaly, fields, latitudes, pulsations, storms, and measuring and data transmitting instruments

RELATED TOPICS

Sounding Rockets

15-02

Upper atmosphere aerology and meteorology probes, and other small launch vehicles

Meteorological Satellites	47-01
Nimbus, Tiros, meteorological data from satellites	
Gravitation	90-01
Gravitational theory, effect and fields, equations and potential, antigravity, gravitational collapse, and gravity gradient control of satellites	
Radiation Belts	93-03
Inner and outer radiation belts, Van Allen Belt, artificial radiation belts, and trapped radiation	
47 METEOROLOGY AND CLIMATOLOGY	
METEOROLOGICAL SATELLITES	47-01
Nimbus, Tiros, meteorological data from satellites	
WEATHER FORECASTING	47-02
Methods and instruments of weather data acquisition and processing, theory and methods of weather prediction	
MICROMETEOROLOGY	47-03
Smallest scale observation of physical and dynamic occurrences within the surface boundary layer of the atmosphere, includes turbulence, air pollution, launch conditions	
CLOUD RESEARCH	47-04
Types of cloud formation, cloud physics, nephanalysis, and cloud seeding	
METEOROLOGICAL INSTRUMENTS	47-05
Types and uses of meteorological instruments	
<i>RELATED TOPICS</i>	
Upper Earth Atmosphere	46-01
Earth atmosphere above the troposphere, ionospheric composition, phenomena, chemical reactions and satellite measurement	
Sounding Rockets	15-02
Upper atmosphere aerology and meteorology probes and small launch vehicles	
48 OCEANOGRAPHY	
WATER RESOURCES AND OCEANOGRAPHY	48-01
Water conservation and development, hydrology, remote sensing of floods, snow cover, ice, oceanography, other hydrosphere studies	

LIFE SCIENCES

51 LIFE SCIENCES (GENERAL)	
BIOLOGY (GENERAL)	51-01
Microbiology, ecology, botany, genetics and cytology	
BIOCHEMISTRY	51-02
Chemistry of living organisms and physiochemistry	
52 AEROSPACE MEDICINE	
AEROSPACE MEDICINE	52-01
Aerospace medical problems and studies, e.g., toxicity and weightlessness, medical aspects of astronaut performance reaction, and neurophysiology	
CLINICAL MEDICINE	52-02
General medicine, body systems and functions, diseases, and drugs	
PHYSIOLOGICAL FACTORS	52-03
Functions related to body composition, physical performance reaction, and neurophysiology	
BIOLOGICAL RADIATION EFFECTS	52-04
Effects of radiation on the human body and other living organisms	

53 BEHAVIORAL SCIENCES

PSYCHOLOGICAL FACTORS

Factors related to psychology, psychiatry, individual and group behavior, crew training and testing

53-01

54 MAN/SYSTEM TECHNOLOGY AND LIFE SUPPORT

LIFE SUPPORT SYSTEMS

Systems that support life in spacecraft, isolation chambers or uninhabitable environments, including space cabin atmosphere, food, water, and waste disposal

54-01

CREW SAFETY AND PROTECTIVE CLOTHING

Survival techniques, escape, rescue, and protective clothing and equipment, space suits

54-02

HUMAN ENGINEERING

Design and engineering of devices, equipment, and artificial environments to the requirements of man

54-03

MAN-MACHINE SYSTEMS

Systems in which man and machine are interrelated

54-04

BIOINSTRUMENTATION

Biotelemetry, medical electronics, physiological monitors, biological measurement, and biological data handling

54-05

RELATED TOPIC

Cybernetics and Bionics

Methods of control and communications common to living organisms and machines and those systems that function in the manner of or resembling human systems

63-01

55 PLANETARY BIOLOGY

EXTRATERRESTRIAL LIFE

Exobiology and detection, simulation, and genesis of life outside earth

55-01

RELATED TOPIC

Sterilization

Spacecraft sterilization, sterilization methods, clean rooms, and contamination control

14-04

MATHEMATICAL AND COMPUTER SCIENCES

59 MATHEMATICAL AND COMPUTER SCIENCES (GENERAL)

APPLIED MATHEMATICS

Mathematical applications in physical, biological and aerospace sciences

59-01

DATA PROCESSING

Automatic source data processing, data handling, conversion and compression

59-02

60 COMPUTER OPERATIONS AND HARDWARE

DIGITAL AND ANALOG COMPUTERS

Computer hardware, structure, peripheral equipment, and applications, hybrid computers

60-01

AIRBORNE OR SPACEBORNE COMPUTERS

Computer design for onboard spacecraft or aircraft use

60-02

61 COMPUTER PROGRAMMING AND SOFTWARE

COMPUTER SOFTWARE

Programming and computer languages, systems analysis, data management

61-01

62 COMPUTER SYSTEMS

RELATED TOPICS

Computer Software

Programming and computer languages, systems analysis, data management

61-01

Aerospace Management	81-01
Management techniques, cost control, production engineering, personnel management	
63 CYBERNETICS	
CYBERNETICS AND BIONICS	63-01
Methods of control and communications common to living organisms and machines and those systems that function in the manner of or resembling human systems	
64 NUMERICAL ANALYSIS	
NUMERICAL ANALYSIS	64-01
Mathematical models, theoretical studies and applications	
65 STATISTICS AND PROBABILITY	
STATISTICS AND PROBABILITY	65-01
Statistical techniques and applications, probability and reliability theory, probability equations, and problem solving	
66 SYSTEMS ANALYSIS	
<i>RELATED TOPIC</i>	
Computer Software	61-01
Programming and computer languages, systems analysis, data management	
67 THEORETICAL MATHEMATICS	

PHYSICS

70 PHYSICS (GENERAL)	
<i>RELATED TOPICS</i>	
See specific topics on Subject Groups 71-77	
71 ACOUSTICS	
ACOUSTICS	71-01
Acoustic attenuation, simulation, scattering radiation and vibration, hydroacoustics	
ULTRASONICS	71-02
Use in medicine and materials research, absorption properties and effects	
72 ATOMIC AND MOLECULAR PHYSICS	
ATOMIC PHYSICS	72-01
Atomic theory, collision, beams, energy, reactions, and properties	
MOLECULAR PHYSICS	72-02
Molecular theory, energy, structure, collision, beams, properties, molecules, and instrumentation	
73 NUCLEAR AND HIGH-ENERGY PHYSICS	
NUCLEAR PHYSICS	73-01
Nuclear particles, structure, reactions, and force	
RADIOACTIVITY	73-02
Measurement, detection, material, waste, fission products, and radioactive elements	

<i>RELATED TOPIC</i>	
Cosmic Radiation	93-01
Primary and secondary cosmic radiation, galactic and stellar radiation	
74 OPTICS	
OPTICS	74-01
Optical equipment and technology, electron optics, crystal optics, fiber optics, and optical properties	
LIGHT	74-02
Light scattering, measurement effects and transmission	
75 PLASMA PHYSICS	
PLASMA APPLICATIONS	75-01
Plasma arc welding, plasma spraying, plasma power source, plasma jet technology	
PLASMA DYNAMICS	75-02
Plasma theory, conductivity, diagnostics, plasma pinch, plasma sheath, plasma waves, and plasma oscillations	
MAGNETOHYDRODYNAMICS	75-03
Magnetohydrodynamic theory and applications	
<i>RELATED TOPIC</i>	
Astrophysical Plasmas	90-02
Solar, cosmic, and interstellar plasmas, solar atmosphere, and stellar plasma	
76 SOLID-STATE PHYSICS	
SOLID STATE DEVICES	76-01
Devices using solid state components, diodes, and rectifiers	
SUPERCONDUCTIVITY	76-02
Superconductivity, superconducting magnets, superconducting transition temperatures, critical temperatures, and critical field curves of superconducting material	
DIELECTRICS	76-03
Dielectric material including dielectric constant of materials, electric losses and ohmic resistance of compounds, permeability and polarization of dielectric substances and media	
EPITAXIAL DEPOSITION	76-04
Epitaxial film deposition techniques, electrical properties of epitaxial deposited films and applications	
<i>RELATED TOPICS</i>	
Metal Crystals	25-02
Structure, defects, and technology of metal crystals	
Semiconductors and Transistors	33-02
Semiconductor and transistor types, devices, materials and applications	
Magnetism	33-12
Theory and research, aeromagnetism, ferromagnetism, hydromagnetism, paramagnetism, and thermomagnetism	
77 THERMODYNAMICS AND STATISTICAL PHYSICS	
<i>RELATED TOPICS</i>	
Statistics and Probability	65-01
Statistical techniques and applications, probability and reliability theory, probability equations, and problem solving	
Molecular Physics	72-02
Molecular theory, energy, structure, collision, beams, properties, molecules, and instrumentation	

SOCIAL SCIENCES

80 SOCIAL SCIENCES (GENERAL)

RELATED TOPICS

See specific topics in Subject Groups 81-85

81 ADMINISTRATION AND MANAGEMENT

AEROSPACE MANAGEMENT

81-01

Management techniques, cost control, production engineering, personnel management

82 DOCUMENTATION AND INFORMATION SCIENCE

INFORMATION TECHNOLOGY

82-01

Documentation, information processing and retrieval, and information systems

83 ECONOMICS AND COST ANALYSIS

RELATED TOPIC

Aerospace Management

81-01

Management techniques, cost control, production engineering, personnel management

84 LAW AND POLITICAL SCIENCE

WORLD SPACE PROGRAMS AND AEROSPACE LAW

84-01

NASA programs in general, foreign aerospace programs, international cooperation, law related to space and aeronautics, Congressional aerospace hearings

85 URBAN TECHNOLOGY AND TRANSPORTATION

URBAN TECHNOLOGY AND TRANSPORTATION

85-01

Application of aerospace technology to the problems of cities, urban development, planning, research, and transportation, rail transportation, rapid transit systems, police services, water and sewage treatment, waste utilization, and land use

SPACE SCIENCES

88 SPACE SCIENCES (GENERAL)

RELATED TOPICS

See specific topics under Subject Groups 89-93

89 ASTRONOMY

SOLAR ASTRONOMY

89-01

Solar activity, physics, solar telescopes and observatories

STELLAR ASTRONOMY AND COSMOLOGY

89-02

Stellar, galactic astronomy, including radioastronomy, origin and evolution of the universe

METEORS AND METEORITES

89-03

Meteor properties and hazards, micrometeoroids and micrometeorites, comets, interplanetary dust

90 ASTROPHYSICS

GRAVITATION

90-01

Gravitational theory, effect and fields, equations and potential, antigravity, gravitational collapse, gravity gradient control of satellites, geophysical gravitational fields

ASTROPHYSICAL PLASMAS

90-02

Solar, cosmic, and interstellar plasmas, solar atmosphere, and stellar plasma

91 LUNAR AND PLANETARY EXPLORATION

THE MOON

91-01

Studies of the lunar surface and lunar surface data, lunar interior, lunar environment, spacecraft and vehicles used in exploration, specific projects, and lunar landings

PLANETARY SCIENCES AND EXPLORATION

91-02

Planetary composition, surfaces, atmospheres, and environment, spacecraft and vehicles used in planetary exploration

RELATED TOPICS

Space Probes

15-03

Lunar and planetary probes, including Pioneer, Ranger, Mariner, Voyager, and deep space probes

Astrophysical Plasmas

90-02

Solar, cosmic, and interstellar plasmas, solar atmosphere, and stellar plasma

92 SOLAR PHYSICS

RELATED TOPIC

Solar Astronomy

89-01

Solar activity, physics, solar telescopes and observatories

93 SPACE RADIATION

COSMIC RADIATION

93-01

Primary and secondary cosmic radiation, galactic and stellar radiation

SOLAR RADIATION AND ACTIVITY

93-02

Solar radiation, observation, instrumentation, hazards to space flight, protection from solar radiation, solar storms, solar flares, solar winds, and sunspots

RADIATION BELTS

93-03

Inner and outer radiation belts, Van Allen Belt, artificial radiation belts, and trapped radiation

National Aeronautics and
Space Administration

Washington, D.C.
20546

Official Business

Penalty for Private Use, \$300

THIRD-CLASS BULK RATE

Postage and Fees Paid
National Aeronautics and
Space Administration
NASA-451



NASA

POSTMASTER

If Undeliverable (Section 158
Postal Manual) Do Not Return
